ABSTRACT

A host matrix -- normally a binder such as cellulose acetate propionate in a solvent such as acetone -- contains a radiation-polymerizable photopolymer -- normally a monomer like dipentaerythritol pentaacrylate in combination with a crosslinker like 1-vinyl-2-pyrrolidinone, an initiator like N-phenyl glycine, and/or a photosensitizer like camphor quinone -- that is initially uniformly doped with a stable dye -- typically Rhodamine B and/or Bodipy Red -- that photoinitiates photopolymerization. Upon selective exposure of certain regions of the matrix by radiation, most normally laser light radiation, the dye will initially migrate and redistribute itself to radiatively-exposed regions until, dye migration being substantially complete, photopolymerization will occur, locking the migrated dye in place at a relatively higher concentration at the selectively exposed regions. The dye therein stably located can be optically detected by, preferably, light-radiation-stimulated fluorescence. The medium thus serves as an optical memory, including of the volume type, that can be reliably permanently written quickly and inexpensively at high density.